

ZASLOVSKIY, Yu. S., SHOR, G. I., KIRIDLOV, I. G.: LEBEDEVA, F. B.; YEVSTIGNEYEV, Ya. V.,
and ZLOBIN, O. A.

"The Application of Radioactive Indicators (Tagged Atoms) in the Investigation
of Wear Resistant Properties of Lubricating Oils." p. 58.

in book Study and Use of Petroleum Products, Moscow Gostoptekhizdat, 1957. 213 pp.

TRUDY VNI NP No. 6.

Tish collection of articles gives results of scientific research work of the All-Union
Scientific Research Inst. for the Processing of Petroleum and Gas for the Production
of Synthetic Liquid Fuel.

ZLOBIN, O.A.; YEVSTIGMEYEV, Ye.Y.; KADUSHIN, A.A.; SHOR, G.I.

Automatically maintaining the separation level of media of
different densities. Khim. i tekhn. topl. i masel 4 no.1:20-24
Ja '59. (MIRA 12:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut neftyanoy
promyshlennosti.
(Radioisotopes--Industrial applications) (Petroleum--Refining)

YEVSTIGNEYEV, YE. V.

5

36500
S/081/62/000/005/096/112
B160/B138

11.9700
AUTHORS:

Zaslavskiy, Yu. S., Shor, G. I., Shneyerova, R. N.,
Lebedeva, F. B., Morozova, I. A., Ryabova, D. V.,
Stukin, A. D., Yevstigneyev, Ye. V., Yurchenko, P. F.,
Nizhnik, V. Ya.

TITLE:

Radioactive tracer methods for studying the functional
properties of oils with additives

PERIODICAL:

Referativnyy zhurnal. Khimiya, no. 5, 1962, 534, abstract
52262 (Sb. "Prisadki k maslam i toplivam", M.,
Gostoptekhizdat, 1961, 263 - 269)

TEXT: A short description is given of the radioactive tracer method
developed in the VNIIP for studying electrokinetic processes connected
with the mechanism of the action of certain dispersive additives for
heavy diesel lubricating oils. A diagram of the experimental equipment
is given. Its main feature is the combined use of radiation counters as
electrodes for producing the electric field and for recording the movement
of the labelled dispersed phase. Soot with the radioactive isotope Tl^{204}

Card 1/2

Radioactive tracer methods for...

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was used to model the dispersed phase (oil oxidation and fuel combustion products). In the radioisotope method of studying the detergent properties of oils with additives the amount of gummy deposit was measured from the absorption of Co^{60} beta radiation in it. The method of studying the detergent properties of oils with additives, based on the oxidation of a thin layer of oil on a heated strip of steel, has been improved by radiometric measurement of the deposits, using Ca^{45} as a source. The chemical activity of anticorrosion additives was estimated by determining the kinetics of the transitions from radioactive steel (irradiated with neutrons via Fe^{59}) or copper (activated by introducing tracer amounts of Ag^{110} into molten copper) to the oil, under the influence of the test additives. [Abstracter's note: Complete translation]

Card 2/2

ZASLAVSKIY, Yu. S.; SHOR, G. I.; MOROZOVA, I. A.; LEBEDEVA, F. B.; YEVSTIGNEYEV, Ye. V.;
SHNEYEROVA, R. N.

"New methods of investigation of lubricant properties."

report submitted for Intl Lubrication Conf, Washington, D.C., 13-16 Oct 64.

KOGAN, Grigoriy Il'ich; YEVSTIGNEYEV, Yu.A., kand. tekhn. nauk,
retsenzent; LESNICHENKO, I.I., red. izd-va; CHERNOVA, Z.I.,
tekhn. red.; DEMKINA, N.F., tekhn. red.

[Manufacture of spur gears with ground teeth] Izgotovlenie tsi-
lindricheskikh kolez so shlifovannymi zub'iami. Moskva, Mashgiz,
1962. 238 p. (MIRA 15:6)

(Gear cutting)

YEUSTIGNEYEV, YU.F.

56-6-8/56

AUTHOR
TITLE

VAVILOV, Yu.N., YEUSTIGNEYEV, Yu.F., NIKOL'SKIY, S.I.
Investigation of the Penetrating Component of Extensive Cosmic
Ray Air Showers (-Russian)
(Issledovaniye pronikayushchey komponenty shirokikh atmosfericheskikh livney kosmicheskogo izlucheniya -Russian)
Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol 32, Nr 6, pp 1319-1327
(U.S.S.R.)

PERIODICAL

ABSTRACT

The present paper investigates the spatial distribution of myons in broad atmospheric showers, which are caused by primary particles with different energy. These measurements were carried out in an altitude of 3860 m (Pamir) in the summer and fall of 1954.
Experimental order: The spatial distribution of the charged particles was investigated by the method of the individual investigation of the showers by means of numerous counters (which were connected with a hodoscopic device). The general scheme of the experimental order is illustrated by means of a drawing.
The spatial distribution of Myons in the shower: The density of the myon flux in the showers investigated did not suffice for measuring them in an individual shower if detectors with the usual surface area are used. The mean value of the density of the myon flux in the showers with assumed number of particles was determined by counting the myon passages through the detector. The varying influence exercised by the angle of emission of the pions upon the spatial distribution of the soft and the penetrating component of the broad atmosphere.

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Investigation of the Penetrating Component of Extensive
Cosmic Ray Air Showers.

56-6-8/56

~~SECRET~~

spheric showers is obviously connected with two factors. Firstly, the myons have considerably longer ranges than the electron-photon avalanches. On the other hand the form of the function of the spatial distribution of the electrons near the axis of the shower indicates a considerable influence exercised by neutral pions with an energy of $>10^{10}$ EV upon the production of the electron-photon component in the depth of the atmosphere.

The last chapter deals with the dependence of the number of myons in a broad atmospheric shower on the energy of the primary particle causing the shower.

(5 illustrations and 2 tables).

ASSOCIATION
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AVAILABLE
Card 2/2

Not Given.

12.1.1957

Library of Congress.

S/121/60/000/006/006/008

AUTHOR: Yevstigneyev, Yu. I.

TITLE: Thres-Component Milling Dynamometer

PERIODICAL: Stanki i Instrument, 1960, No. 6, pp. 31-32

TEXT: The author describes a three-component milling dynamometer, designed and made by the Kafedra "Rezaniye, stanki i instrument" Kazanskogo aviatsionnogo Instituta (Department "Cutting. Machine Tools and Tools" of the Kazan' Aviation Institute), which makes it possible to measure the three components of cutting forces directly at the cutting edge of the tool. This dynamometer ensures steadiness of reading, eliminates the reciprocal effects between the components of the cutting forces on its reading and reduces hysteresis to zero. The author gives a description of the design and operation of the device pointing out that, although the tests were carried out at low cutting speeds, owing to the fact that heat-proof alloys were tested, it stands to reason to presume that the dynamometer can also be used at higher speeds. There are: 1 diagram, 1 circuit diagram, 1 oscillogram and 5 Soviet references. ✓

Card 1/1

ACCESSION NR: AR4027676

S/0276/64/000/001/EL60/EL60

SOURCE: RZh. Tekhnologiya mashinostroyeniya, Abs. 181034

AUTHOR: Yevstigneyev, Yu. I.

TITLE: Theoretical and experimental study of the the dynamics of milling the ends of heat-resistant alloys

CITED SOURCE: Tr. Kazansk. aviats. in-ta, vy*p. 74, 1963, 3-10

TOPIC TAGS: heat-resistant alloy, alloy machining, alloy milling, end milling, butt end milling

TRANSLATION: The author presents the results of theoretical and experimental studies of the maximum forces acting on the cutter during butt-end milling of heat-resistant alloys EI-437B and EI-617. Also included is a formula for determining the circumference force, 4 illustrations, 2 tables, bibliography with 7 titles. S. Avrutin.

DATE ACQ: 0 Mar 64

SUB CODE: ML

ENCL: 00

Card 1/1

ACCESSION NR: AT4035379

S/2529/63/000/074/0003/0010

AUTHOR: Yevstiqneyev, Yu. I.

TITLE: Theoretical and experimental study of the dynamics of face milling of heat resistant alloys

SOURCE: Kazan. AviatSIONnyy Institut. Trudy*, no. 74, 1963. AviatSIONnaya tekhnologiya i organizatsiya proizvodstva (Aeronautical technology and organization of production), 3-10

TOPIC TAGS: milling, face milling, milling dynamics, alloy milling, heat resistant alloy, alloy EI-437B, alloy EI-617, lathe operation, cutting tool property.

ABSTRACT: Very little theoretical or experimental work has been done on the dynamics of face milling where high temperature alloys are involved. The author therefore investigated the maximum forces acting on the front and back faces of the cutting tool during face milling of alloys EI-437B and EI-617. The forces acting on the front face of a cutting tool were estimated from the formula of A. M. Rozenberg

$$P_1 = 0,185 H_n \cdot s \cdot t \cdot \frac{K^2 - 2K \sin \gamma + 1}{K \cos \gamma \left[1 - \frac{\sin \eta}{K \cos (\eta - \gamma)} \right]} \quad (1)$$

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ACCESSION NR: AT4035379

where P_1 is the force acting in the direction of the cutting speed, $s \cdot t$ is the cross section of the shear, K is the chip setting coefficient, γ is the front rake angle, η is the friction angle on the front face of the tool, and H_B is the Brinell hardness of the chip in the zone of primary deformation. The forces acting on the back face of the tool, which must be considered when the feed rate does not exceed 0.15 mm/rev. due to the elasticity of the strain hardened material under the tool, were calculated by a modification of the formula of L. A. Galin:

$$N = \frac{p(x) \pi \cdot a \cdot b}{2} \sqrt{\frac{a-x}{x}} \quad (2)$$

where $p(x)$ is the pressure distribution underneath the ram, a and b are the width and length of the contact zone, and high-pressure plastic deformation is not considered. The theoretical results were then confirmed by experiments with a polished sheet of El-4378 steel, pressed with a ram having an angle of inclination of the face of 7° and a rounding radius of 0.02 mm, at pressures of 200-700 kg. The actual pressure under the ram was determined from the microhardness of the part and was dependant on the stamping angle as shown in Fig. 1 of the Enclosure. Further experiments were carried out to determine the force during turning of El-4378 steel on a lathe, using an electroinductive dynamometer. The final conclusion is that the resultant circumferential force during face milling can be

Cord 2/4

ACCESSION NR: AT4035379

expressed as $P_t = P_f + \mu N$ where μ is the coefficient of friction between the back face of the tool and the machined surface. "The work was carried out under the guidance of M. E. Itkin (Candidate in the Technical Sciences)." Orig. art. has: 4 figures, 3 tables and 6 formulas.

ASSOCIATION: Kafedra "Rezaniye, stanki i Instrumenty" Kazanskogo aviatsionnogo Instituta (Department of Cutting, Machine Tools and Instruments, Kazan Institute of Aviation)

SUBMITTED: 08Dec62

DATE ACQ: 22May64

ENCL: 01

SUB CODE: MM

NO REF SOV: 007

OTHER: 000

Card 3/4

ACCESSION NR: AT4035379

ENCLOSURE: 01

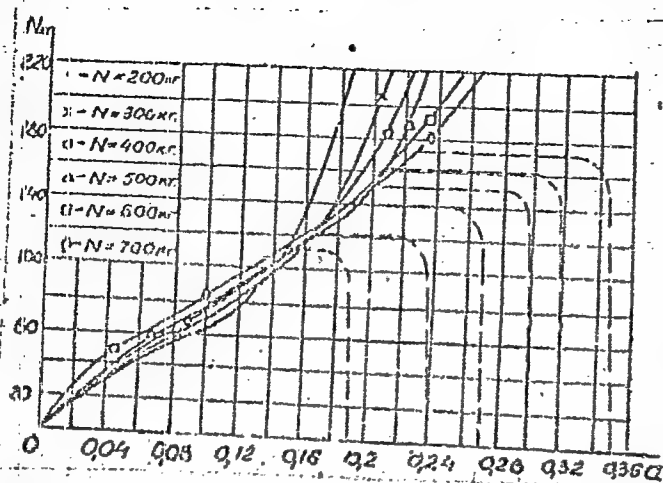


Fig. 1. Distribution of pressure under an oblique ram at various loads (H).

Card 4/4

SUKHANOVSKIY, S.I.; AKHMINA, Ye.I.; YEVSTIFEYEVA, E.B.; KHARLAMOVA, M.V.

Chemical composition of the organic and ash parts of hydrolysis
lignins. *Gidroliz. i lesokhim. prom.* 18 no.5:15-17 '65.
(MIRA 18:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut gidroliznoy
i sul'fitno-spirtovoy promyshlennosti.

YEVSTIGNEYEVA, I.S.

History and present state of theoretical arithmetic at schools
and pedagogical institutes. Uch.zap.Ivan.gos.ped.inst. 34:103-
128 '64. (MIRA 18:4)

FEDOTKOV, Aleksandr Petrovich; YEVSTIGHYEVA, I.V., red.; TARAKANOVA, I.I.,
tekhn.red.

[Concise handbook for mechanical engineers] Kratkii spravochnik
tekhnologa-mashinostroitelia. Moskva, Gos.izd-vo ohor. promyshl.,
1957. 253 p. (MIRA 11:5)
(Mechanical engineering--Handbooks, manuals, etc.)

ANDREYEV, Vitaliy Semenovich; GUREYEV, Petr Antonovich; YEVSTIGNEYEVA, L.A.,
red.; TIMOFEEVA, N.V., tekhn. red.

[Organized recruitment of workers in the U.S.S.R.] Organizovannyi
nabor rabochikh v SSSR. Moskva, Gos.izd-vo iurid.lit-ry, 1960.
78 p. (MIRA 14:6)

(Contract labor)

SHEFER, L.B.; YEVSTIFEYEVA, L.A.

Methodology of determining 17-ketosteroids in urine.
Lab. delo no. 11:679-681 '64. (MIRA 17:12)

1. Institut tuberkuleza (direktor- kand.med.nauk A.A.Terlikbayev)
Ministerstva zdravookhraneniya Kazakhskoy SSR, Alma-Ata.

KISELEV, Yakov L'vovich; CHURIN, Vyacheslav Nikolayevich; YEVSTIGNEYEVA,
L.A., red.; TIMOFEYEVA, N.V., tekhn. red.

[Industrial hygiene and safety measures; collection of the most
important decrees and regulations] Okhrana truda i tekhnika
bezopasnosti; spornik vazhneishikh postanovlenii i pravil. Mo-
skva, Gos. izd-vo iurid. lit-ry, 1961. 493 p. (MIRA 14:9)

1. Russia (1923- U.S.S.R.) Laws, statutes, etc.
(Industrial hygiene--Law and legislation)
(Industrial safety--Law and legislation)

LEVIN, M.S., kand. tekhn. nauk; SMETANICH, Ya.S., kand. fizik-matematich.
nauk; GRIMBLIT, I.B., inzh.; YEVSTIGNEYEVA, L.P., inzh.

Economic evaluation of the configuration of a power distribution
network using an electronic digital computer. Elek. sta. 34 no.5:
51-54 My '63. (MIRA 16:7)

(Electric power distribution)
(Electronic digital computers)

YEVSTIGNEYEVA, M. F.

Dissertation: "Data on the Pathological Anatomy of the Central Nervous System in Certain Cardiac Diseases (Myocardial Infarcts, Rheumatism)." Cand Med Sci, Second Moscow State Medical Inst imeni I. V. Stalin, 6 Sep 54. (Vechernyaya Moskva, Moscow, 19 Aug 54)

SO: SUM 393, 28 Feb 1955

RITOVA, V.V.; YEVSTIGNEYEVA, N.A.

Vaccinal strains of influenza viruses. Vop. virus. 5 no. 2:172-
178 My-8 '60. (MIRA 14:4)

1. Institut virusologii imeni D.I. Ivanovskogo, Moskva.
(INFLUENZA)

YEVSTIGNEYEVA, N.A., RITOVA, V.V.

"Live tissues vaccine against influenza."

Report submitted for the 1st Intl. Congress on Respiratory Tract
Diseases of Virus and Rickettsial Origin. Prague, Czech.
23-27 May 1961.

ZHDANOV, V.M.; RITOVA, V.V.; GEFEN, N.Ye.; ZHUKOVSKIY, A.M.;
BERLYANT, M.L.; YEVSTIGNEYEVA, N.A.; YEGOROVA, N.B.; KREYNIN,
L.S.; LEONIDOVA, S.L.; SERGEYEV, V.H.; SMIRNOV, M.S.

Comparative study of intranasal and aerosol methods of
vaccination against influenza. Zhur. mikrobiol., epid. i
immun. 33 no.11:63-67 N '62. (MIRA 17:1)

1. Iz Instituta virusologii imeni Ivanovskogo AMN SSSr.

RITOVA, V.V.; ZHUKOVSKY, A.M. [Zhukovskiy, A.M.]; YEVSTIGNEYEVA, N.A.

Comparative study of the immunological properties of live
influenza vaccine in volunteers. J.hyg.epidem. 7 no.3:272-280
'63.

1. Ivanovskiy Institute of Virology, Academy of Medical Sciences
of the U.S.S.R., Moscow.

*

SHUBLADZE, A.K.; ANAN'YEV, V.A.; NARSKIY, S.V.; BARINSKIY, N.F.;
KAVERIN, N.V.; YEVSTIGNEYEVA, N.A.

Some results of studying virus strains isolated from epidemic hepatitis patients. Vest. AMN SSSR 18 no.6:49-55 '63.
(MIRA 17:1)

VIOLOVICH, N.A.; YEVSTIGNEYEVA, N.S.

Ecology of deer fly in the forest steppe zone of Western Siberia.

Izv. SO AN SSSR no.4 Ser. Biol.-med. nauk no.1:106-110 '64.

(MIRA 17:11)

1. Institut biologii Sibirskogo otdeleniya AN SSSR, Novosibirsk.

44361
S/044/62/000/012/019/049
A060/A000

16,3000

AUTHORS:

Kostenko, V.G., Yavstaf'yeva, N.V.

TITLE:

Certain differential equations invariant with respect to groups of transformations

PERIODICAL:

Referativnyy zhurnal, Matematika, no. 12, 1962, 62, abstract 12B276
(Zb. rob. aspirantiv Mekhan.-matem. ta fiz. fak. L'vivs'k. un-t, 1961, no. 1, 100 - 104; Ukrainian)

TEXT:

The authors consider nonlinear equations of the form

$$\Omega = \Delta u - \varphi(x, y) \cdot P(u) = 0, \quad (1)$$

which are invariant with respect to infinite continuous groups of translations.

Let

$$Uf = \xi(x, y, u) \frac{\partial f}{\partial x} + \eta(x, y, u) \frac{\partial f}{\partial y} + \zeta(x, y, u) \frac{\partial f}{\partial u} \quad (2)$$

be an arbitrary operator,

$$U''f = \xi \frac{\partial f}{\partial x} + \eta \frac{\partial f}{\partial y} + \zeta \frac{\partial f}{\partial u} + \alpha_1 \frac{\partial f}{\partial p} + \alpha_2 \frac{\partial f}{\partial q} + \beta_1 \frac{\partial f}{\partial r} + \beta_2 \frac{\partial f}{\partial s} + \beta_3 \frac{\partial f}{\partial t}, \quad (3)$$

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Certain differential equations invariant with

where

$$\alpha_1 = \frac{d\xi}{dx} - p \frac{d\xi}{dx} - q \frac{d\eta}{dx}, \quad \alpha_2 = \frac{d\xi}{dy} - p \frac{d\xi}{dy} - q \frac{d\eta}{dy}, \quad \beta_1 = \frac{d\alpha_1}{dx} - r \frac{d\xi}{dx} - s \frac{d\eta}{dx},$$

$$\beta_2 = \frac{d\alpha_1}{dy} - r \frac{d\xi}{dy} - s \frac{d\eta}{dy} = \frac{d\alpha_2}{dx} - s \frac{d\xi}{dx} - t \frac{d\eta}{dx}, \quad \beta_3 = \frac{d\alpha_2}{dy} - s \frac{d\xi}{dy} - t \frac{d\eta}{dy}$$

is a twice continued operator from operator (2). As follows from the work (RZHM, 1962, 2B260) the differential equation (1) will be invariant with respect to translations if and only if

$$u'' \Omega = 0. \quad (4)$$

The set of translations which leaves the differential equation invariant always represents a closed group. Investigating (4) with $\varphi(x, y) = 1$, the authors obtain for the transformation coefficients the system of differential equations:

$$\frac{\partial \xi}{\partial x} = \frac{\partial \eta}{\partial y}; \quad \frac{\partial \xi}{\partial y} = -\frac{\partial \eta}{\partial x}, \quad \frac{\partial \xi}{\partial u} = \frac{\partial \eta}{\partial u} = 0; \quad \frac{\partial^2 \xi}{\partial x \partial u} = \frac{\partial^2 \xi}{\partial y \partial u} = \frac{\partial^2 \xi}{\partial u^2} = 0;$$

$$\xi \frac{dF}{du} - F(u) \left(\frac{\partial \xi}{\partial u} - 2 \frac{\partial \xi}{\partial x} \right) = \frac{\partial^2 \xi}{\partial x^2} + \frac{\partial^2 \xi}{\partial u^2}. \quad (5)$$

Card 2/3 11 NOT SELECTED

Certain differential equations invariant with

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Then the authors restrict themselves to the case of nonlinear equations, which are invariant with respect to infinite continuous groups of transformations. (5) implies that ξ and η are harmonic conjugate functions of the variables x and y and do not depend on u ; $\xi = cu + \xi_1(x, y)$; substituting ξ in (5) and considering (5) as an identity in u we obtain: Theorem 1. To have the equation $\Delta u = F(u)$ be invariant with respect to an infinite continuous groups of translations, it is necessary and sufficient that $F(u) = p \cdot e^{ku}$, where p is defined in (3), and k is a constant. Theorem 2. For the nonlinear equation (1) with $\varphi(x, y) \neq \text{const}$ to be invariant with respect to an infinite continuous group of translations, it is necessary and sufficient that

$$\varphi(x, y) = \pm e^{\psi(x, y)}, \quad F(u) = e^{ku},$$

where $\psi(x, y)$ is any harmonic function, and k is any constant. I.N. Vekua's hypothesis (RZhMat, 1962, 2B260) as to the fact that, to find the general solution of the equation $\Delta u = \varphi(x, y) e^u$, it is sufficient to know that one of its particular solutions is confirmed from the viewpoint of group sets only for the case when $\varphi(x, y) = \pm |w(z)|$, where $w(z)$ is any analytic function of the variable $z = x + iy$.

[Abstracter's note: Complete translation]

A.S. Fokht

Card 3/3

YEVSTATIEV, D., inzh.; MINKOV, M., inzh.

Application of soil cement in building. Tekh delo 13 no.427:
3 19 My '62.

PONOMARENKO, A.V., kand.biolog.nauk; YEVSTIFEYEV, M.F., ~~agronom-entomolog~~

From the experience obtained in Rostov Province in the protection
of corn against wireworms. Zashch. rast. ot vred. i bol. 6 no.5:
17-18 My '61. (MIRA 15:6)

1. Kafedra zoologii bespozvonochnykh i entomologii Rostovskogo
universiteta.

(Rostov Province--~~Corn~~ (Maize)--Diseases and pests)

(Rostov Province--Wireworms)

SEMENIKHIN, I.V.; YEVSTIGNEYEV, R.I.

Shaving gears on parallel axles. Av.prom. 26 no.8:88-89 Ag '57.
(MIRA 15:4)

(Gear cutting)

YEVSTIGNEYEV, V.P.

Problems in the coordination of economic research. Vest. AN
SSSR 32 no.3:99-101 Mr '62. (MIRA 15:2)
(Economic research--Congresses)

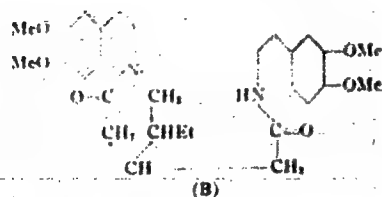
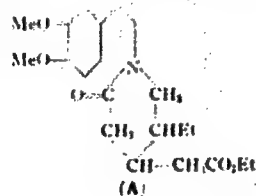
ANAN'YEV, V.A.; SHUHLADZE, A.K.; NARSKIY, S.V.; BARINSKIY I.F.; KAVERIN, N.V.;
YEVSTIGNEYEVA, N.A.

Study of the etiology of Botkin's epidemic hepatitis. Vop.med.
virus. no.9:3-8 '64. (MIRA 18:4)

CA YEVSTIGNEYEVA, R.P.

10

Synthesis of the alkaloid emetine. R. P. Yevstignejeva, R. S. Livshits, I. I. Zakharkin, M. S. Il'ina, and N. A. Preobrazhenskii. *Doklady Akad. Nauk S.S.S.R.* 73, No. 4, 639-42 (1950).—The structure of emetine is proved by the following synthesis. Hydrogenation over Ni or Pt oxide of a mixt. of *Et* β -(1-cyanopropyl)glutarate and homoveratrylamine (I) (excess) leads to addn. of the latter to the CN group with subsequent loss of NH_3 and the interaction of the secondary amine group with one of the CO_2Et groups, closing the ring by an amide link to yield the compd. A; cyclization of I and heating A to (200-250°) yields the compd. B,



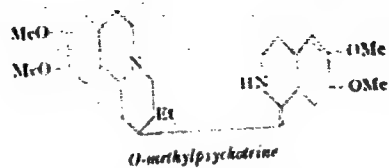
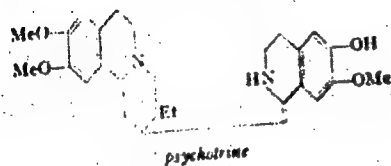
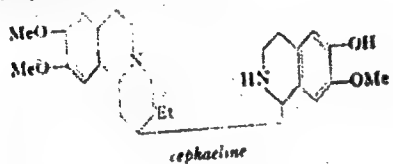
which with POCl_3 yields the compd. C, whose HCl salt on hydrogenation over Pt catalyst yields 6',5'-dimethoxy-6-ethyl-7-(6',7'-dimethoxy-1',2',3',4'-tetrahydro-1'-isoquinolylmethyl)-3,4,5,6,7,8-hexahydro(1,2:1',2')benzoquinolizine, i.e. emetine, identical with the natural product. The alkaloid was also prepd. by condensation of the above cyano ester with homoveratrylamine to yield B, which was treated as above; alternatively, A was cyclized and treated with KI , yielding the iodide of the *Et* ester of 6',5'-dimethoxy-6-ethyl-3,4,5,6,7,8-hexahydro-(1',2':1,2)-benzoquinolizine-7-acetic acid, which on reduction, reductive alkylation with homoveratrylamine, and cyclization also gave emetine. Some intermediates are characterized: *Et* β -(1-bromomethyl)propylglutarate, m. 132.5-3.5°; anhydride of β -(1-dichloroethyl)propylglutaric acid, b₂ 155-7°; β -carboxymethyl- γ -ethyl-4-oxobutanoate, m. 102.5-3.5°, b₂ 170-3°; *Et*

1951

CA

16

β-(1-cyanopropyl)glutamate, b.p. 130-40°. The synthetic emetine gives the same characteristic reactions as the natural product and when heated with iodine in EtOH yields subretnine iodide, m. 170-80°, identical with the product from natural emetine. Hence, the following related alkaloids are probably as shown:



G. M. Kosolapoff

1961

YEVSTIGNEYEVA, R. P.

"Synthesis of Kmetine Alkaloid." Sub 26 Mar 51, Moscow Inst of Fine
Chemical Technology imeni Lomonosov. *Cand Chem Sci*

Dissertations presented for science and engineering degrees in Mos-
cow during 1951.

SO: Sum. No. 480, 9 May 55

YEVSTIGNEYEVA, R. P.

191T32

USSR/Chemistry - Pharmaceuticals

Jul 51

Investigation Into a Series of Isoquinoline Compounds. IV. Synthesis of 1- β -(p'-Byridyl)-ethyl-7,6'-Dimethoxy-1,2,3,4-Tetrahydroisoquinoline. R. S. Liveness, R. P. Yevstigneyeva, M. S. Maynova, N. A. Preobrazhenskiy, Moscow Inst Fine Chem Technol Iment M. V. Lomonosov

"Zhur Obshch Khim" Vol XXI, No 7, 1360-1364

Synthesized over intermediate compds (many not earlier described in literature) isoquinoline derivs, listed above, opening way to synthesis of analogues of emetine close to it in structure.

191T32

USSR/Chemistry - Pharmaceuticals (Contd) Jul 51

Footnote states that subsequent to submission of article to editors (30 Mar 49) above authors and L. I. Zakharukin completed synthesis of emetine, established its constitution as 4',5'-dimethoxy-6-ethyl-7-(1"-methyl-6",7"-dimethoxy-1",2",3"-hydroxy-1,2:1',2'-benzoxazolidine (structural formula is shown), which differs from constitution proposed by Brindley and Pyman.

191T32

USSR/Chemistry - Alkaloids

21 Nov 51

"Synthetic Research in the Series of Alkaloids of Ipecac and Cinchona," N. A. Preobrazhenskiy, R. P. Ievstigneyeva, T. S. Levchenko, K. M. Fedynushkina

"Dokl Ak Nauk SSSR" Vol XXVI, No 3, pp 421-423

The steps in the synthesis of substances leading to alkaloids of the emetine group had been described. Glutaconic acid ester and alkyl-substituted cyanoacetic esters were the starting materials. Also presents a parallel scheme for a synthesis starting with the diethyl ester of alpha, beta-dihydroxysuccinic acid. This opens the way to the synthesis of quinine over homoquinine. In

214718

general the procedures described permit syntheses of compounds containing meroquinene and homomerquinene groupings (also of corresponding dihydro compounds), thus leading to ipecacuanina and cinchona alkaloids.

IEVSTIGNEYEVA, R. P.

214718

YEVSTIGNEYEVA, R.P.

Chemical Abst.
Vol. 48 No. 5
Mar. 10, 1954
Organic Chemistry

(6)
Isoquinoline compounds. V. Synthesis of the natural
~~alkaloid, emetine.~~ R. P. Yevstigneeva, R. S. Livshits,
M. S. Balaeva, L. I. Zakharukin, and N. A. Predobrozhenkin
(Moscow Inst. Fine Chem. Technol.). *J. Gen. Chem.*
U.S.S.R. 22, 1511-16 (1952) (Engl. translation).—See C.A.
47, 5049c. H. L. H.

MF
1-27-54

YEVSTIGNEVA, R. P.

Chemical Abst.
 vol. 48 No. 3
 Feb. 10, 1954
 Organic Chemistry

Isouquinoline compounds. VII. Synthesis of 3-(1,1-dimethoxymethyl)propylglutaric acid. M. N. Baimova, R. P. Yevstigneva, R. S. Livshits, K. K. Kuz'mina, and N. A. Petrobratchevskii. Khim. V. Lomonosov Inst. Fine Chem. Technol., Moscow. Zhur. Obshch. Khim. 23, 114-12 (1953); cf. C.A. 47, 75875. —Heating 60 g. PrCHO , 87 g. $\text{CH}_3(\text{CO}_2\text{H})$, 40 ml. pyridine, and a few drops piperidine 2 hrs. at 60-70° and 3 hrs. at 110° gave 70% $\text{PrCH}(\text{CHO})\text{CH}_2\text{CH}_2\text{CO}_2\text{H}$, b. 98-102°, m. 34-5°. Heated with NaOH and H_2O it gave 70% Et ester, b. 174-5°. This (80 g.) and 50 g. HCO_2Et added to 13 g. Na in 400 ml. MeOH and allowed to stand 1 day gave a ppt. of Na deriv. of $\text{EtCH}(\text{CHO})\text{CH}_2\text{CH}_2\text{CO}_2\text{Et}$, which treated with ice, the aq. soln. extd. with CaCl_2 and the aq. layer acidified with H_2PO_4 to Congo red and extd. with Et_2O gave, on evapn. of Et_2O , 54% crude $\text{EtCH}(\text{CHO})\text{CH}_2\text{CH}_2\text{CO}_2\text{Et}$ (I); this distd. in N atm. in the presence of a little urotropin, b. 65-70°, d_4^{20} 1.4412, n_D^{20} 1.4648; the product gives violet color with FeCl_3 and its MFR indicates that it is nearly all oxo form. The product tends to polymerize on repeated distn. The Na deriv. of the above ester (11 g.), 12 g. abs. EtOH, and 45 ml. Et_2O acid. with HCl (4.6 g. added) were stirred with cooling 2 hrs., then 14 hrs. at room temp., neutralized with NaHCO_3 , filtered, and distd., yielding 30.6% $\text{EtCH}(\text{CHO})\text{CH}_2\text{CH}_2\text{CO}_2\text{Et}$ (II), b. 68-78°, d_4^{20} 0.9927, n_D^{20} 1.4459. I (5 g.) and 4.35 g. HCO_2Et , treated with 0.1 g. NH_4Cl in 2 ml. abs. EtOH and heated on steam bath 30 min., allowed to stand overnight, decanted and the soln. treated with 2 vol. Et_2O and washed with 5% NH_4OH gave on distn. of the org. layer 35.0% $\text{EtCH}(\text{CH}(\text{OEt})_2)\text{CH}_2\text{CH}_2\text{CO}_2\text{Et}$ (III), b. 44-50°. To EtONa from 4 ml. EtOH and 0.22 g. Na was added at 30-40° 3 g. $\text{CH}_3(\text{CO}_2\text{Et})$, kept 30 min. and treated with 2 g. II and heated 5 hrs.; after concn. and treatment with H_2O the org. layer gave 55.7% $\text{EtCH}(\text{CH}(\text{OEt})_2)\text{CH}_2\text{CH}_2\text{CO}_2\text{Et}$ (IV), b. 148-0°. To 0.6 g. Na in 10 ml. EtOH was added 7.8 g. $\text{CH}_3(\text{CO}_2\text{Et})$, and 6 g. III and heated on water bath 5 hrs.; after usual aq. treatment there was obtained 48.3% $\text{EtCH}(\text{CH}(\text{OEt})_2)\text{CH}_2\text{CH}_2\text{CO}_2\text{Et}$ (V), b. 160-3°. This (5.5 g.) refluxed with 4.6 g. KOH, 45 ml. H_2O and 45 ml. MeOH 5 hrs., concd.,

(over)

chilled, acidified with HCl and exd. with Et_2O gave 37% $\text{EtCH}(\text{CH}_3)\text{OEt} \cdot \text{CH}(\text{CH}_3)\text{CO}_2\text{H}$, b. 155–7°. VIII. Condensation of substituted β -propiolactamic acids with homoveratrylamine. 1. 1. Ziskhardt and H. A. Prochazka-Kil (M. B. Lomonosov Inst. Fine Chem. Technol., Moscow), *Ibid.*, 163–5. Letting 1.5 g. γ -chloro- β -valero-, α -methyl- β -lactid (I) stand with 5 ml. SOCl_2 2 hrs. gave the corresponding acyl chloride, b. 137–8°, in 47% yield. This (3.7 g.) in C_6H_6 added to 3.4 g. homoveratrylamine and 1.7 g. pyridine in C_6H_6 and stirred 1 hr., then treated with H_2O gave 83% corresponding β -homoveratrylamide, $\text{C}_{15}\text{H}_{21}\text{O}_3\text{N}$, a viscous oil. This (5 g.), 7.5 ml. NaOH , and 50 ml. MePh refluxed 1 hr., decanted, the residue treated with 30 ml. dil HCl then a. level of tar and treated with Na_2SO_4 and exd. with CHCl_3 gave 32% yellow solid β -[β -(1,4-dihydroxy-2-methoxy- γ -oxamethyl)ethyl]- β -amido- γ -valerolactid- HCl , m. 199–201° (from EtOH); pot. m. 181–2°. In EtOH acid with dry HBr at 0° gave after 1.5 hrs. 7.5% β -[β -($\text{CH}_3\text{CH}(\text{CH}_3)\text{CO}_2\text{CH}_2\text{CH}_2\text{CO}_2\text{H}$, b. 140–1°, n_D 1.4628, which (5 g.) with 12 g. homoveratrylamine in MePh and reflux 2.5 hrs. gave $\text{Et} \cdot \beta$ -homoveratryl- β -ethyl- α -propiolactid- γ -acetate, b. 227–31°, 21.6%. Heating I (3 g.) with 8 g. homoveratrylamine 4 hrs. at 190–230° gave 68% dihomoveratrylamide of β - α -hydroxyisopropylpropiolactid acid, $\text{C}_{21}\text{H}_{29}\text{O}_5\text{N}$, a viscous oil. Heating $\text{HO}_2\text{CCH}_2\text{CH}(\text{CH}_3)\text{CO}_2\text{H}$ in C_6H_6 with SOCl_2 2 hrs. at 50° gave the acyl chloride, 77.5%, b. 141–3°, which, added in C_6H_6 to homoveratrylamine with cooling gave 83% dihomoveratrylamide of β -(α -bromomethyl)-propylglutaric acid, a viscous oil (from EtOH - Et_2O). The products are intermediates for synthesis of emetine.

G. M. Kuznetsov

YEVSTIGHNEVA, R.P.; BRAYER, Yu.; PREOBRAZHENSKIY, H.A.

Synthesis of emetanine alkaloid. Dokl. AN SSSR 117 no.2:227-229
N 57. (MIRA 11:3)

1. Predstavleno akademikom I.N. Nazarovym.
(Ipecacuanha)

5(3)

807/153-58-5-7/28

AUTHORS:

Yevstigneyeva, R. P., Malina, Yu. F., Preobrazhenskiy, N. A.

TITLE:

Synthesis of Cis and Trans Homocinchonololipone (Sintez tsis- i trans-gomotsinkholoyponov)

PERIODICAL:

Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1958, Nr 5, pp 46-51 (USSR)

ABSTRACT:

The authors extended the earlier (Refs 1-4, 6, 7) devised synthesis scheme to the compounds of indole structure, as far as alkaloids of this group are of theoretical and practical interest as well (Ref 5). Homocinchonololipone and homo merochinene are of importance for the synthesis of the alkaloids of the indole group according to the scheme mentioned. The synthesis of homocinchonololipone described in the present paper was carried out on the basis of the diethyl ester of the β -(α' -cyan)-propyl glutaric acid. This ester is the most important semiproduct in the synthesis of the alkaloid emetin (Refs 6, 7). By hydrogenating the said ester 4-carbethoxy methyl-5-ethyl-piperidone-2 (by-product in the emetin production) is obtained in 2 isomeric forms: 1) Crystalline (II-a), and 2) Oily (II-b). The synthesis with these two substances was

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SOV/153-58-5-7/28

Synthesis of Cis and Trans Homocincho Loipone

carried out separately. The reduction of the said piperidone with lithium aluminum hydride leads to 3-ethyl-4-(β -oxy ethyl)-piperidines (III-a and b). The crystalline piperidone unsoluble in ether was reduced in dioxane, the oily one in ether. By the action of thionyl chloride upon the hydrochlorides of the said piperidines hydrochlorides of the 3-ethyl-4-(β -ethyl chloride)-piperidines are formed. Without isolation these are transformed into N-acetyl-3-ethyl-4-(β -ethyl chloride)-piperidines (IV-a and b). When treating the latter with potassium cyanide N-acetyl-3-ethyl-4-(β -ethyl cyanide)-piperidines (V-a and b) are formed. The saponification of these piperidines finally yields 3-ethyl-4-(β -carboxyl-ethyl)-piperidines, i. e. homocincho loipones (VI-a and b). Chlorine aurates of homocincho loipone were synthesized: a) from the crystalline form of 4-carbethoxy-methyl-5-ethyl-piperidone-2 (II-a) with a melting point of 174.4-175°; b) from the oily form (II-b) with a melting point of 194.5-195°. The structure of the synthesized substances was checked by comparison of the intermediate products (III-a and b) with 3-ethyl-4-(β -oxy ethyl)-piperidine (III-v), which had been synthesized by way of the merochinene stage from natural quinine. As is known, the piperidine products

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SOV/153-58-5-7/28

Synthesis of Cis and Trans Homocinchonolipone

of the cinchona bark-alkaloids maintain their cis configuration. Table (p 48) gives the characteristics of the compounds synthesized. Infrared spectra (Fig p 48, taken by Yu. N. Shenker) proved the identity of the synthesized substances mentioned (III-a, b and v) with those from natural quinine. Based on these spectra as well as on the melting points the authors arrived at the conclusion that the homocinchonolipone synthesized from the semi-product corresponds to a cis-configuration, whereas that from the oily type corresponds to a trans-configuration. There are 1 figure, 1 table, and 7 Soviet references.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni M. V. Lomonosova, Kafedra tekhnologii lekarstvennykh i dushistykh veshchestv (Moscow Institute for Fine Chemical Technology imeni M. V. Lomonosov, Chair of the Technology of Medicinal Substances and Aromatics)

Card 3/4

79-28-5-11/69

AUTHORS: Yevstigneyeva, R. P., Kashnikova, N. M., Baynova, M. S.,
Preobrazhenskiy, N. A.

TITLE: Investigations in the Series of Isoquinoline Compounds
(Issledovaniya v ryadu izokhinolinevykh soyedineniy)
XII. Synthesis of 4',5'-Dimethoxy-5,6-Dimethyl-7-(1"-Methyl-
-6",7"-Dimethoxy 1",2",3",4" tetrahydroisoquinolyl)-
-3,4,5,6,7,8-Hexahydro-Benz-(1',2'; 1,2)-Quinolizine (XII.
Sintez 4',5'-dimetoksi-5,6-dimetil-7-(1"-metil-6",7"-dimetoksi-
-1",2",3",4"-tetragidroizokhinolil)-3,4,5,6,7,8-geksagidro-
-benz-(1',2';1,2)khinolizina)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 5,
pp. 1184 - 1189 (USSR)

ABSTRACT: One of the most interesting properties of the alkaloid emetine
(formula I of scheme 1) is its capability to convert into
the red-colored compound, the so-called rubremetine (Reference
1-3) on the action of light oxidizing agents. Its structure
has hitherto not been determined although some proposals in
this respect were uttered (Reference 4-8). The most probable

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79-28-5-11/69

Investigations in the Series of Isoquinoline Compounds. XII.

formulae of those suggested for rubremetine demand the formation of a ring system with the hydrocarbon atom C_8 taking part in it. The formation of such a system would be very difficult in the presence of the substituent of the above-mentioned carbon atom, as has to be assumed. In order to carry out a more detailed investigation of the influence of the ring substituent on the formation of rubremetine the authors carried out the synthesis of two analogs of emetine which have two alkyl substituents in two free positions at the carbon atoms C_5 and C_8 , namely: of 4,5'-dimethoxy-5,6-dimethyl-7-(1"-methyl-6",7"-dimethoxy-1",2",3",4"-tetrahydroisoquinolyl)-3,4,5,6,7,8-hexahydro-benz-(1'2' : 1,2)-quinolizine (IV) and of 2) 8-methyl-emetine (V) (see scheme 2). The synthesis of the former is the subject of this report. The compound (IV) is also of interest because it corresponds to one of the assumed structures. As a basis for the synthesis the scheme 3 elaborated for emetine (Reference 9) was used. Thus the synthesis of the 4,5'-dimethoxy-5,6-dimethyl-7-

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79-28-5-11/69

Investigations in the Series of Isoquinoline Compounds. XII.

-(1"-methyl-6",7"-dimethoxy-1",2",3",4"-tetrahydroisoquinolyl)-
-3,4,5,6,7,8-hexahydro-benz(1',2' : 1,2)-quinolizine ana-
logous to emetine was realized. The authors obtained a rubro-
-compound in the oxidation with bromine of the product analo-
gous to emetine and thus proved that the substituent at the
carbon atom C₅ does not impede the formation of a rubremetine
analog. There are 1 figure and 9 references, 1 of which is
Soviet.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii (Moscow
Institute for Fine Chemical Technology)

SUBMITTED: April 18, 1957

Card 3/3

79-28-5-12/69

AUTHORS: Yevatiyevaya, R. P., Lavrova, L.V., Zarankina, Ts. D.,
Preobrazhenskiy, N. A.

TITLE: Investigations in the Series of Isoquinoline Compounds
(Issledovaniya v ryadu izokhinolinovykh soyedineniy)
XIII. Synthesis of 8-Methylemetine (XIII. Sintez 8-metilemetina)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 5, pp. 1190-1196,
(USSR)

ABSTRACT: The synthesis of 8-methylemetine was carried out in order
to explain the influence of the alkyl substituent at the carbon
atom C₈ in the molecule of emetine on the formation of the
rubro compound. For the synthesis of 8-methylemetine that
scheme elaborated for the production of emetine served as
scheme (ref. 1). (see reaction process in the mentioned
scheme)! The final product, the desired 8-methylemetine
(XIII) separates in the end in form of a light-yellow oil.
By treating the ether solution of 8-methylemetine with an ether
saturated with hydrogen chloride a chlorine hydrate is obtained

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79-28-5-12/69

Investigations in the Series of Isoguinoline Compounds. XIII. Synthesis of 8-Methylemetine

in form of a colorless amorphous powder. A crystalline chlorine hydrate could not be obtained as it is extremely soluble in alcohol. In the case of the oxidation of the basic 8-methylemetine (XIII) with bromine and iodine no rubro-compounds could be synthesized. The oxidation with bromine yielded a slightly yellowish, and that with iodine a yellow amorphous product. The ultraviolet spectra (see figure) of these compounds remind intensely of the spectra of the salts of psychotrine which, as is known, represents an intermediate product in the oxidation of emetine in its conversion to rubroemetine. Thus the presence of an alkyl substituent at the carbon atom C_8 hampers the formation of a rubro compound, which proves the participation of the carbon atom C_8 in the formation process of rubroemetine. There are 1 figure and 3 references, 2 of which are Soviet.

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79-28-5-12/69

Investigations in the Series of Isoquinoline Compounds. XIII. Synthesis
of 8-methylemetine

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii
(Moscow Institute for Fine Chemical Technology)

SUBMITTED: April 18, 1957

Card 3/3

YEVSTIGMEYEVA, R.P.

Isoquinoline compounds. Part 14: Esters of isomeric 4',5'-dimethoxy-6-ethyl-3,4,5,6,7,8-hexahydro-benz-(1,2:1',2')-quinolizil-7-acetic acids. Zhur.ob.khim. 28 no.9:2458-2463 S '58. (MIRA 11:11)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii.
(Acetic acid)

YEVSTIGHNEVA, R.P.; GLUSHKOV, R.G.; PREOBRAZHENSKIY, N.A.

Isoquinoline compounds. Part 15: Synthesis of isomeric α -methyl-
psychotrines. Zhur. ob. khim. 28 no.9:2463-2472 S '58.

(MIRA 11:11)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii.
(Alkaloids) (Psychotrine)

SOV/79-28-11-41/55

AUTHORS:

Ch'en Ch'ang-pai, Yevstigneyeva, R.P., Preobrazhenskiy, N.A.

TITLE:

Synthesis of the 2-(α -Pyridyl)-3-(β -Oxyethyl)-Indole
(Sintez 2-(α -piridil)-3-(β -oksietil)-indola)

PERIODICAL:

Zhurnal obshchey khimii, 1958, Vol 28, Nr 11, pp 3085-3090 (USSR)

ABSTRACT:

The scope of the present paper is the synthesis of the most important quinalcaloids of the indole group, the cinchonamines. First the synthesis of the 2-(α -pyridyl)-3-(β -oxy-ethyl)-indole (III), an analog of cinchonamine according to scheme 1 is described, which leads to the synthesis of cinchona. The condensation of the γ -butyrolactone (IV) with the ester of the picolinic acid (V) yields the lactone (VI), which with hydrochloric acid is transformed into the ketone (VII). Its phenyl hydrazone (VIII) is obtained in two isomeric forms differing with respect to their physico-chemical properties. The ultraviolet absorption spectra of the two isomers in ethyl alcohol are the same, but the absorption maxima of the α -isomer are displaced to the side of the short waves, as compared to those of the β -isomer (Fig 1). The β -isomer of the phenyl hydrazone is of higher basicity than the α -isomer and contrary to the latter loses easily a molecule of water on its heating in vacuum; this may be due to the fact that the hydroxyl

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Synthesis of the 2-(α -Pyridyl)-3-(β -Oxyethyl)-Indole

507/79-28-11-41/55

group and the hydrogen in secondary nitrogen are close to each other and can easily separate in form of water under the formation of a six-membered cycle (XI). From this follows that the cis-compound (IX) must be attributed to the α -isomer and the anti-configuration (X) to the β -isomer as regards the α -pyridyl group. The α -isomer of the phenyl hydrazone of ketone (VII) in spite of all attempts could not be transformed into the indole derivative. On heating the hydrochloride of the phenyl hydrazone of the α -pyridyl- ω -oxy-propyl ketone (of the β -isomer) with concentrated hydrochloric acid the 2-(α -pyridyl)-3-(β -oxy-ethyl)-indole (III) was separated from the reaction mass, which was proved by its ultraviolet absorption spectrum (Fig 2) that points to the presence of the indole nucleus. The analogous scheme based on the condensation of the γ -butyrolactone with the ethyl ester of 3-vinyl quinuclidine carboxylic acid-6 made it possible to the authors to realize finally the synthesis of the alkaloid cinchonamine.- There are 2 figures and 3 references.

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Synthesis of the 2-(α -Pyridyl)-3-(β -Oxyethyl)-Indole

SOV/79-28-11-41/55

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii
(Moscow Institute of Fine Chemical Technology)

SUBMITTED: September 13, 1957

Card 3/3

5(3)

AUTHORS: Ch'en Ch'an-pai, Yevstigneyeva, R. P., SOV/20-123-4-37/53
Preobrazhenskiy, N. A.

TITLE: Synthesis of the Alkaloid Cinchonamine (Sintez alkaloida tsinkhonamina)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 4,
pp 707 - 708 (USSR)

ABSTRACT: The alkaloid of the cinchona bark is a link between the cinchona alkaloids of the quinoline series and those of the indole series (Refs 1,2). In the present paper the synthesis of the optically active cinchonamine is described. The authors used a scheme for the production of the pyridine analog of cinchonamine (Ref 3), which had been devised by them earlier. Ethyl ester of 3-vinyl-quinuclidine carboxylic acid-6 (I) is condensed with γ -butyrolactone (II) in dry benzene in the presence of sodium ethylate at 40-85°. After an appropriate treatment α -(3-vinyl-quinuclidoyl-6)- γ -butyrolactone (III) is formed as a colorless, viscous, oily substance. It is very soluble in ether, alcohol, benzene, and water; its melting point is 152-153°/0.5 mm, its yield 35.7%. On heating the

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Synthesis of the Alkaloid Cinchonamine

30Y/20-123-4-37/53

substance (III) with 2 n sulfuric acid at 120° the lactone cycle is split and a decarboxylation under the formation of ω -oxy-propyl- α -(3-vinyl-quinuclidyl-6)-ketone (IV) takes place; yield 70.3%. The obtained light yellow liquid is heated with 10% phenyl hydrazine solution in alcohol for 8 hours. The formed phenyl hydrazine (V) of the substance (IV) is a viscous, yellow oil; its yield is 76.5%. After further appropriate treatment the cinchonamine is formed as colorless crystals which are very soluble in alcohol, ether, chloroform and benzene, less soluble in cold alcohol and petroleum ether, and difficult to dissolve in water. The mentioned constants of the synthesized optically active cinchonamine fully agree with those of the natural substance mentioned in publications (Ref 5). The reaction devised by the authors opens the way for the production of other alkaloids of this series. There are 5 references, 2 of which are Soviet.

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Synthesis of the Alkaloid Cinchonamine

SOV/20-123-4-37/53

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im.
M. V. Lomonosova (Moscow Institute of Fine Chemical Technology
imeni M. V. Lomonosov)

PRESENTED: July 31, 1958, by A. I. Oparin, Academician

SUBMITTED: July 30, 1958

Card 3/3

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SOV/79-30-1-46/78

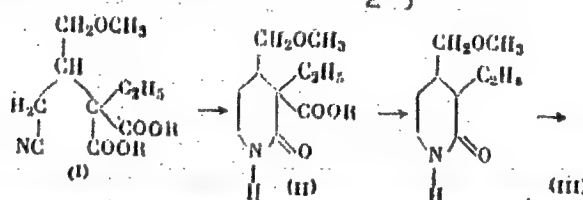
AUTHORS: Malina, Yu. F., Yevstigneyeva, R. P., Preobrazhenskiy, N. A.

TITLE: Synthesis of cis-Homocincholoipon

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, Nr 1, pp 213-216 (USSR)

ABSTRACT: The synthesis of cis- and trans-homocincholoipons based on diethyl ester of β -(α -cyanopropyl)glutaric acid was reported previously (Izv. vyssh. uchebn. zaved., MVO SSSR, Khimiya i khim. tekhnolog., 1958, Nr 5, p 46). The present study deals with the synthesis of cis-homocincholoipon (VI; R'=H) based on ethyl ester of the mononitrile of α -ethyl- α -carboethoxy- β -methoxymethylglutaric acid (I; R=C₂H₅):

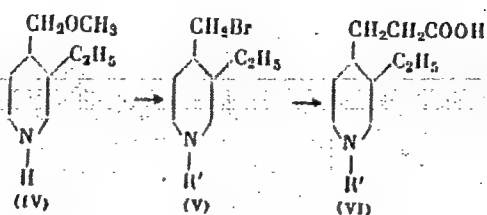
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Synthesis of cis-Homocincholoipon

77385

SOV/79-30-1-46/78



The reduction of ester (I) in ethanol in the presence of Raney nickel gave 3-ethyl-3-carboethoxy-4-methoxy-methylpiperidone-2 (II; $\text{R}=\text{C}_2\text{H}_5$) in two isomeric forms: (1) bp $175-177^\circ\text{C}$ at 1 mm; and (2) bp $210-215^\circ\text{C}$ (1 mm). Fraction $175-177^\circ\text{C}$ was used in the subsequent reactions. Saponification of piperidone (II) ($\text{R}=\text{C}_2\text{H}_5$) with KOH in water-alcohol solution gave the acid (II; $\text{R}=\text{H}$) which on decarboxylation gave 3-ethyl-4-methoxymethylpiperidone-2 (III). Reduction of (III) with lithium aluminum hydride in dioxane gave 3-ethyl-4-

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Synthesis of cis-Homocincholoipon

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SOV/79-30-1-46/78

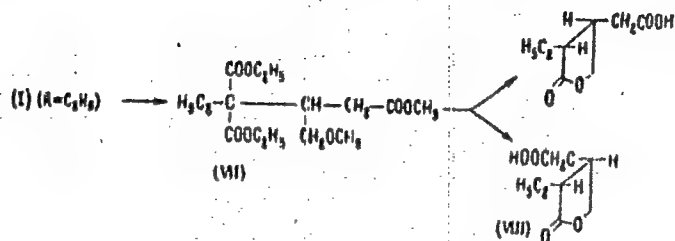
methoxymethylpiperidine (IV). The latter, on treatment with 47% hydrobromic acid, gave 1-nitroso-3-ethyl-4-bromomethylpiperidine (V; $R = NO$), which on condensation with sodium malonate, saponification, and decarboxylation gave 1-nitroso-3-ethyl-piperidyl-4-propionic acid (VI; $R = NO$). Finally, the elimination of the nitroso-group by heating the latter acid with cuprous chloride gave cis-homocincholoipon (VI; $R = H$; mp 172-172.5° C). The same starting materials and same type of reactions can be applied also for the synthesis of pilocarpine alkaloids. Ester I ($R = C_2H_5$) on treatment with methanol saturated with HCl gave methyl ester of γ, γ -dicarboethoxy- β -methoxymethylcaproic acid (VII). The latter was hydrolyzed with HCl or 40% hydrobromic acid, and yielded a mixture of diastereomeric α -ethylhomoparaconic acids (VIII; mp 48-60° C), one of which was identified as racemic homopilopic acid (mp 102-103° C), the other as racemic homoisopilopic acid (mp 73-74° C).

Card 3/4

Synthesis of cis-Homocincholoipon

77385

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There are 2 references, 1 U.S., 1 Soviet. The U.S. reference is: C. F. Koelsch, J. Am. Chem. Soc., 68, 146 (1946).

ASSOCIATION: Moscow Institute of Fine Chemical Technology (Moskovskiy institut tonkoy khimicheskoy tekhnologii)

SUBMITTED: December 26, 1958

Card 4/4

5.3600

77872

SOV/79-30-2-23/78

AUTHORS: ~~Xevstigneyeva, R. P.~~, Ch'en Chang-pai, Preobrazhenskiy, N. A.

TITLE: Synthesis of (+)-3-Vinyl-8-quinuclidinecarboxylic Acid

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, Nr 2, pp 473-476 (USSR)

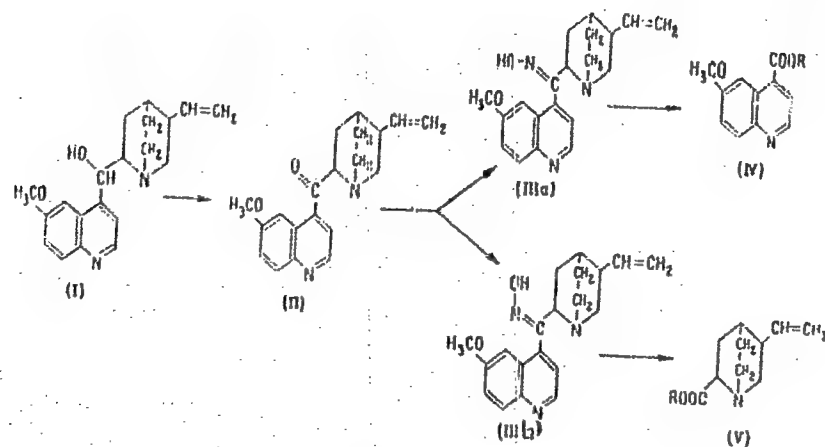
ABSTRACT: The authors developed a new method for the synthesis of (+)-3-vinyl-8-quinuclidinecarboxylic acid from quinine through quinone and one of its oximes (IIIb) as intermediates of the ester of the quinic acid (V, $R = C_2H_5$). Rearrangement of the oxime (IIIa) leads to the ester of quinic acid (IV, $R = C_2H_5$) (see scheme below for the reaction path).

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Synthesis of (+)-3-Vinyl-8-quinuclidinecarboxylic Acid

77872

SOV/79-30-2-23/78



Card 2/5

Synthesis of (+)-3-Vinyl-8-quinuclidinecarboxylic Acid

77872

SOV/79-30-2-23/78

A mixture of oximes IIIa and IIIb is obtained by heating quinone and hydroxylamine hydrochloride in alcoholic solution of alkali, and is purified by dissolving the mixture in 5% KOH with subsequent liberation with carbon dioxide (mp 110-113°, $[\alpha]_D^{20} + 60^\circ$).

The esters were obtained from the mixture in the following way: To the mixture of oximes (71.4 g) dissolved in (560 ml) 5% KOH powdered benzenesulfonylchloride (49.9 g) is added slowly (within 1-1.5 hr), with constant stirring. The reddish-yellow oily precipitate is extracted with chloroform (400 ml), washed with NaOH and water, and dried with NaHSO₄. After vacuum distillation of chloroform, the precipitate is dissolved in alcoholic solution of KOH (117 g KOH in 250 ml CH₃OH and 88 ml H₂O) and heated at 100-105° for 44 hr. The residue is dissolved in water (400 ml) and extracted with benzene. The aqueous portion is neutralized with HCl to pH 7, filtered, concentrated by evaporation, and extracted with hot absolute alcohol.

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Synthesis of (+)-3-Vinyl-8-quinuclidinecarboxylic Acid

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SOV/79-30-2-23/78

After repeated addition of acidified alcohol and vacuum distillation (after prolonged standing of the alcohol solution) of the solvent, the residue is dissolved in water, neutralized with K_2CO_3 , and extracted with ether. Distillation of the residue left after removal of ether results in two fractions--ethyl ester of 3-vinyl-8-quinuclidinecarboxylic acid (yield 14.8% (6.52 g), bp 80-82° (0.5 mm), d_4^{20} 1.0280) and ethyl ester of quinic acid (yield 5.1% (2.5 g), bp 138-142° (0.5 mm)). The 3-vinyl-8-quinuclidinecarboxylic acid is obtained from its ester (V) by letting the latter (0.31 g) stand with 10 ml of water for 10 days, with subsequent vacuum distillation of water (mp 204-206°). There are 3 figures; and 4 references, 1 Soviet, 1 Swiss, 1 U.K., 1 U.S. The U.K. and U.S. references are: T. A. Henry, K. S. Kirby, G. E. Shaw, J. Chem. Soc., 524, (1945); R. B. Woodward, N. L. Wendler, F. J. Brutschy, J. Am. Chem. Soc., 67, 1425 (1945).

Card 4/5

Synthesis of (+)-3-Vinyl-8-quinuclidinecar-
boxylic Acid

77872

SOV/79-30-2-23/78

ASSOCIATION: Moscow Institute of Fine Chemical Technology (Moscov-
skiy institut tonkoy khimicheskoy tekhnologii)

SUBMITTED: February 4, 1959

Card 5/5

5.3600

77873
SOV/79-30-2-24/78

AUTHORS: Hong-Tiung, Yevstigneyeva, R. P., Preobrazhenskiy, N. A.

TITLE: Studies in the Series of Isoquinoline Compounds. XVI. Synthesis of 4',5'-Dimethoxy-6-methyl-7-(1"-methyl-6",7"-dimethoxy-1",2",3",4"-tetrahydroisoquinolyl)-3,4,5,6,7,8-hexahydrobenzo-(1,2:1',2')-quinolizine

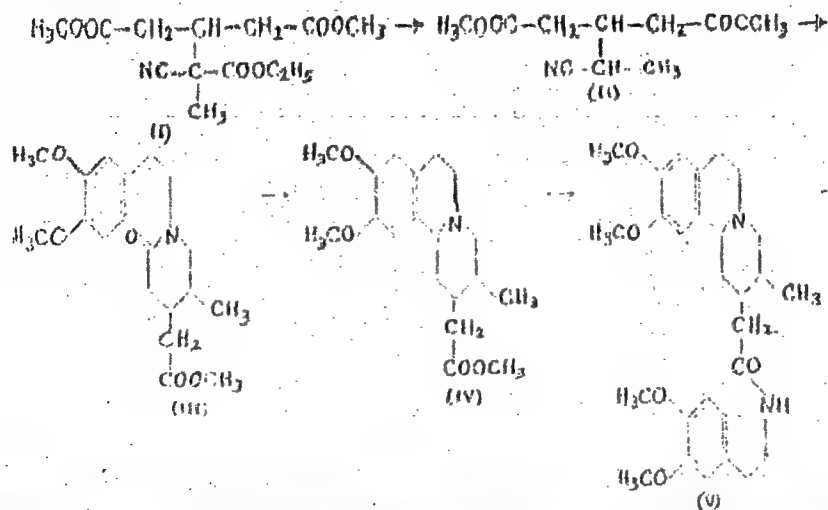
PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, Nr 2, pp 476-479 (USSR)

ABSTRACT: This is a continuation of the series of papers on emetine and its derivatives (Yevstigneyeva, R. P., et al., Zhur. obshchey khim., 28, 1184, 1190 (1958)). The path for the synthesis of 4'5'-dimethoxy-6-methyl-7-(1"-methyl-6",7"-dimethoxy-1",2",3",4"-tetrahydroisoquinolyl)-3,4,5,6,7,8-hexahydrobenzo-(1,2:1',2')-quinolizine (VII) (this compound differs from emetine only by the presence of methyl instead of ethyl group at C₆) is shown in the scheme below.

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Studies in the Series of Isoquinoline Compounds. 77873

XVI. Synthesis of 4', 5'-Dimethoxy-6-methyl-7-(1"-methyl-6", 7"-dimethoxy-1", 2", 3", 4"-tetrahydroisoquinolyl)-3, 4, 5, 6, 7, 8-hexahydrobenzo-(1, 2:1' 2')-quinolizine SOV/79-30-2-24/78

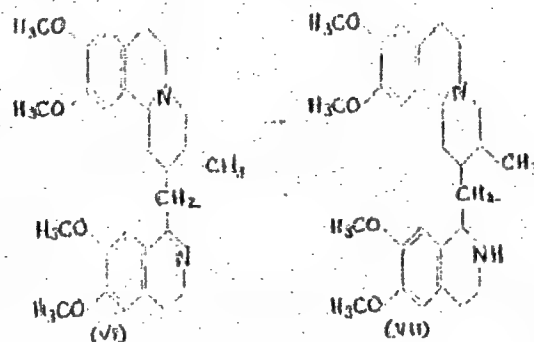


Card 2/5

Studies in the Series of Isoquinoline Compounds. 77873

XVI. Synthesis of 4',5'-Dimethoxy-6-methyl-7-(1"-methyl-6",7"-dimethoxy-1",2",3",4"-tetrahydroisoquinolyl)-3,4,5,6,7,8-hexahydrobenzo-(1,2:1'2')-quinolizine

SOV/79-30-2-24/78



The methyl ester of β - (α ' -cyano- α ' -carbethoxy) -ethylglutaric acid (I) (bp 162-163° (2 mm), d_4^{20} 1.1844, n_D^{20} 1.4620) was synthesized by reacting methyl ester

Card 3/5

Studies in the Series of Isoquinoline Compounds. 77873

XVI. Synthesis of 4',5'-Dimethoxy-6-methyl-7-(1"-methyl-6",7"-dimethoxy-1",2",3",4"-tetrahydroisoquinolyl)-3,4,5,6,7,8-hexahydrobenzo-(1,3:1'2')-quinolizine SOV/79-30-2-24/78

of β -(cyanocarbethoxy)-methylglutaric acid with methyl iodide in presence of sodium methoxide. Saponification and decarboxylation of I gives II (bp 126-127° (2 mm), d_4^{20} 1.1360, n_D^{20} 1.4489). Piperidone (III) (bp 198-204° (0.1 mm)) was obtained by catalytic hydrogenation of (II) in presence of homoveratrylamine. Cyclization of (III) by reacting it with phosphoryl chloride and subsequent reduction of the resulting chloride of tertiary amine results in methyl ester of 4',5'-dimethoxy-6-methyl-3,4,5,6,7,8-hexahydrobenzo-(1,2:1',2')-quinolizyl-7-acetic acid (IV) (mp 192-194°, λ_{\max} 230 (log ϵ 4.19), 285 (log ϵ 3.77), λ_{\min} 260 (log ϵ 3.28)). Heating of the latter with homoveratrylamine leads to the amide (V) (mp 89-91°, λ_{\max} 225 (log ϵ 4.20), 280 (log ϵ 4.00))

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Studies in the Series of Isoquinoline Compounds. 77873

XVI. Synthesis of 4',5'-Dimethoxy-6-methyl- 30V/79-30-2-24/78

7-(1"-methyl-6",7"-dimethoxy-1",2",3",4"-
tetrahydroisoquinolyl)-3,4,5,6,7,8-hexahydro-
benzo-(1,3:1'2')-quinolizine

λ_{\min} 255 (log ϵ 3.60), 345 (log ϵ 3.05)), which,
upon cyclization effected by phosphoryl chloride,
gives dihydroisoquinoline derivative (VI) (mp 59-60°,
 λ_{\max} 225 (log ϵ 4.20), 280 (log ϵ 3.95), 305
(log ϵ 3.79), λ_{\min} 250 (log ϵ 3.58), 300 (log ϵ
3.76)). The hydrochloride of the final compound (VII)
(229-230°, λ_{\max} 230 (log ϵ 4.09), 285 (log ϵ 3.77),
 λ_{\min} 255 (log ϵ 2.92)) is obtained by reduction
of (VI). There are 4 Soviet references.

ASSOCIATION: Moscow Institute of Fine Chemical Technology (Moskov-
skiy institut tonkoy khimicheskoy tekhnologii)

SUBMITTED: February 23, 1959
Card 5/5

S/079/60/030/05/12/074
B005/B002

AUTHORS:

Yevstigneyeva, R. P., Gavrina, N. K., Preobrazhenskiy, N. A.

TITLE:

Investigations in the Series of Isoquinoline Compounds.
XVII. Synthesis of 4',5'-Dimethoxy-7-(1"-methyl-6",7"-di-
methoxytetrahydroisoquinolyl)-3,4,5,6,7,8-hexahydro-
benz-(1,2:1',2')-quinolizine, or C-Noremetine

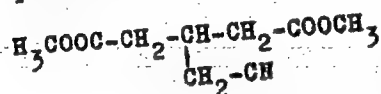
PERIODICAL: Zhurnal obshchey khimii, 1960, Vol. 30, No. 5, pp. 1454-1458

TEXT: C-Noremetine differs from the alkaloid emetine by the absence of the ethyl group on C₆. The authors made use of the scheme of emetine synthesis to work out a procedure for the synthesis of C-noremetine (formula VI), in order to be able to draw comparisons between end products and intermediate products obtained in different ways. These comparisons are important for the clarification of certain problems of stereoisomerism of the natural alkaloid emetine. The synthesis worked out runs along the following scheme: ✓

Card 1/5

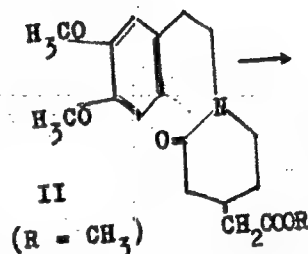
Investigations in the Series of Isoquinoline
Compounds. XVII. Synthesis of 4',5'-Dimethoxy-
7-(1"-methyl-6",7"-dimethoxytetrahydroiso-
quinolyl)-3,4,5,6,7,8-hexahydrobenz-(1,2:1',2')-
quinolizine, or C-Norematine

S/079/60/030/05/12/074
B005/B002

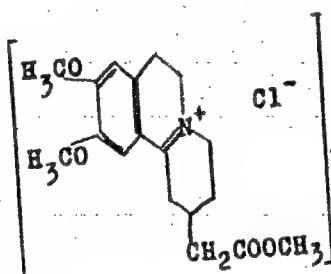


I

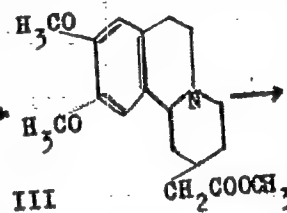
reductive condensation
with homoveratryl amine



ring closure
POCl₃



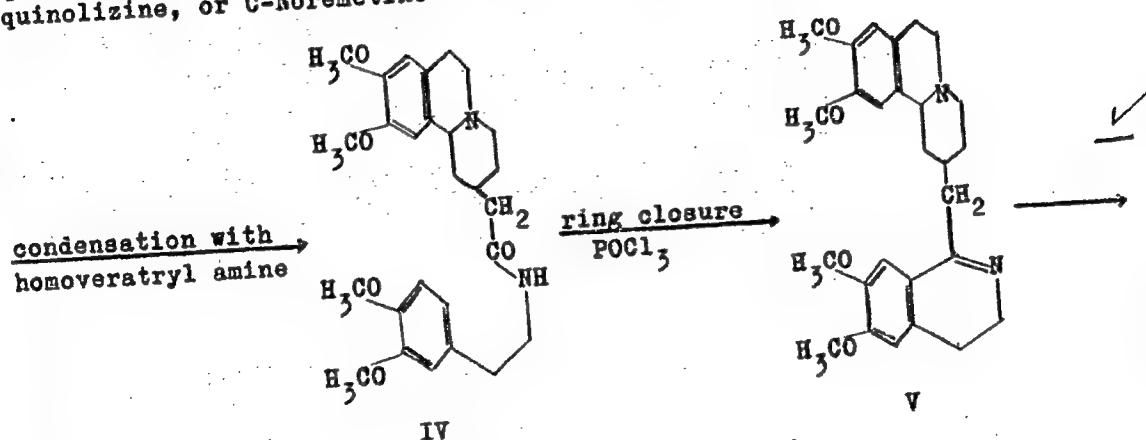
cat. hydrogenation
[H]/Ni



Card 2/5

Investigations in the Series of Isoquinoline
Compounds. XVII. Synthesis of 4',5'-Dimethoxy-
7-(1"-methyl-6",7"-dimethoxytetrahydroiso-
quinolyl)-3,4,5,6,7,8-hexahydrobenz-(1,2:1',2')-
quinolizine, or C-Noremefine

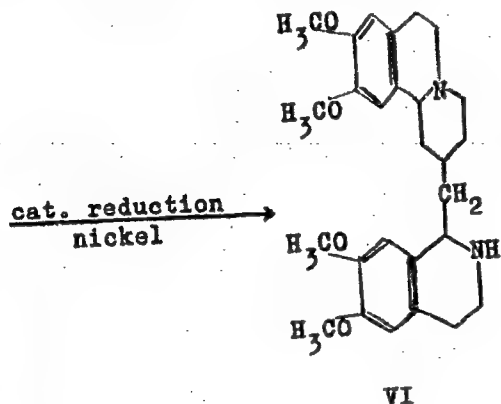
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B005/B002



Card 3/5

Investigations in the Series of Isoquinoline
Compounds. XVII. Synthesis of 4',5'-Dimethoxy-
7-(1"-methyl-6",7"-dimethoxytetrahydroiso-
quinolyl)-3,4,5,6,7,8-hexahydrobenz-(1,2:1',2')-
quinolizine, or C-Noremetine

S/079/60/030/05/12/074
B005/B002



Card 4/5

Investigations in the Series of Isoquinoline
Compounds. XVII. Synthesis of 4',5'-Dimethoxy-
7-(1"-methyl-6",7"-dimethoxytetrahydroiso-
quinolyl)-3,4,5,6,7,8-hexahydrobenz-(1,2:1',2')-
quinolizine, or C-Norematine

S/079/60/030/05/12/074
B005/B002

Compound I was obtained by selective saponification and decarboxylation of the methyl ester of β -(cyano-, carbethoxy)-methyl glutaric acid, which is an intermediate product in the synthesis of emetine (Ref. 5). An experimental part describes in great detail the procedure followed in the synthesis. Yields and characteristic data concerning the intermediate products are given for each stage of synthesis. There are 5 references: 2 Soviet, 1 English, and 2 German. ✓

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii (Moscow
Institute of Fine Chemical Technology)

SUBMITTED: June 2, 1959

Card 5/5

ZOTCHIK, M.V.; YEVSIGNEYEVA, R.P.; PREOBRAZHENSKIY, N.A.

Synthesis of ethyl 4,6,9-triketocaprate. Zhar.ob.khim. 30
no.6:1828-1831 Je '60. (MIRA 13:6)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii.
(Capric acid)

CHEM' CHAN-BAY; YEVSTIGNEYEVA, R.P.; PREOBRAZHENSKIY, N.A.

Synthesis of the natural alkaloid (+)-cinchonamine. Zhur.ob.
khim. 30 no.6:2085-2088 Ja '60. (MIRA 13:6)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii.
(Cinchonamine)

ZOTOHIK, N.V.; YEVSTIGNEYEVA, R.P.; PREOBRAZHENSKIY, N.A.

Synthesis of the ethyl ester of 4,6,9,11,14-pentaketopentadecanoic acid and of the ethyl ester of 4,6,9,11,14,16,19-heptaketoicosanoic acid. Zhur.ob.khim. 30 no.7:2259-2261 J1 '60. (MIRA 13:7)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii.
(Pentadecanoic acid) (Eicosanoic acid)

YEVSTIGMEYEVA, R.P.; GLYBINA, V.A.; OKART, Ye.V.; PROKHRAZHENSKIY, N.A.

Claisen condensation of esters of β -methyllevulinic acid.
Zhur.ob.khim. 30 no.7:2261-2263 J1 '60. (MIRA 13:7)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii.
(Levulinic acid)

ANDREYEV, S.V.; YEVSTIGNEYEVA, R.P.; MIRZABEKOV, A.M.; SPERANSKAYA,
M.P.; PREGORAZHENSKIY, M.A.

Similarity between the chemical structure and biological
activity of ribonuclease and increpan. Zhur.ob.khim. 30
no.7:2433 J1 '60. (MIRA 13:7)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii i
institut farmakologii i khimioterapii Akademii meditsinskikh
nauk SSSR.

(Ribonuclease)

MIROSHNICHENKO, L.D.; YEVSTIGNEYEVA, R.P.; PRDOBRASHENSKIY, N.A.

Infrared absorption spectra and structure of some derivatives
of β -diketones. Zhur.ob.khim. 30 no.8:2533-2536 Ag '60.
(MIRA 13:8)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii.
(Ketones--Spectra)

GLYBINA, V.A.; OKART, Ye.V.; YEVSTIGNEYEVA, R.P.; PREOBRAZHENSKIY, N.A.

Synthesis of esters of 3,8,13-trimethyl-4,6,9,11,14-pentaketo-pentadecanoic and 2,8,13,18-tetramethyl-4,6,9,11,14,16,19-heptaketoicosanoic acids. Zhur.ob.khim. 30 no.8:2536-2539 Ag '60. (MIRA 13:8)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii.
(Pentadecanoic acid)
(Eicosanoic acid)

MIROSHNICHENKO, L.D.; FILIPPOVICH, Ye.I.; YEVSTIGNEYEVA, R.P.; PREDCHAZHEN-
SKIY, N.A.

Prototropic rearrangement in the dipyrromethene series. Dokl. AN
SSSR 134 no.5:1100-1103 O '60. (MIRA 13:10)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V.
Lomonosova. Predstavleno akademikom A.N. Nesmeyanovym.
(Methene)

YEVSTIGNEYEVA, R. P., and ANDREYEV, S. V. (USSR)

"Hypotensive Activity of Increpane and Ribonuclease."

Report presented at the 5th International Biochemistry Congress,
Moscow, 10-16 Aug 1961

YEVSTIGNEYEVA, R. P., Dr. Chem. Sci. (diss) "Synthetic Investigations of Alkaloids of Ipecac." Moscow, 1961, 33 pp. (Moscow State Univ.) 170 copies (KL Supp 12-61, 254).

BOL'SHAKOV, K.A.; YEREMIN, Yu.G.; YEVSTIGNEYEVA, R.P.

Structure of a compound of gallium chloride with methylene blue.
Izv.AN SSSR.Otd.khim.nauk no.5:745-749 My '61. (MIRA 14:5)

1. Institut tonkoy khimicheskoy tekhnologii im. M.V.Lomonosova.
(Gallium compounds) (Methylene blue)

MARKARYAN, E.A.; YEVSTIGNEYEVA, R.P.; PREOBRAZHENSKIY, N.A.

Structure of geissoschizine. Izv. AN Arm.SSR. Khim.nauki
14 no.5:511-512 '61. (MIRA 15:1)

1. Moskovskiy inatitut tenkoy khimicheskoy tekhnologii imeni
M.V. Lomonosova.

(Geissoschizine)

FILIPPOVICH, Ye.I.; YEVSTIGNEYEVA, R.P.; PREOBRAZHENSKIY, N.A.

Synthetic studies in the dipyrromethene series. Zhur.ob.khim. 30
no.10:3253-3257 0 '61. (MIRA 14:4)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii.
(Dipyrromethene)

YEVSTIGNEYEVA, R.P.; TODOROVA, Ya.N.; PREOBRAZHENSKIY, N.A.

Synthesis of the ethyl ester of α -(β' -carboxyethyl)- β -methyllevulinic acid. Zhur. ob. khim. 31 no. 2:441-443 F '61. (MIRA 14:2)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii.
(Levulinic acid)

YEVSTIGNEYEVA, R.P.; TODOROVA, Ya.K.; PREOBRAZHENSKIY, N.A.

Synthesis of the ethyl ester of α -methyl- β - (β' -carboxyethyl)
-levulinic acid. Zhur. ob. khim. 31 no. 2:443-445 F '61.
(MIRA 14:2)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii.
(Levulinic acid)

YEVSTIGNEYEVA, R.P.; RZHENZNIKOV, V.M.; PREOBRAZHENSKIY, N.A.

Fries rearrangement in the 2, 6-dinitrohydroquinone series. Zhur.ob.
khim. 31 no.5:1534-1537 My '61. (MIRA 14:5)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni M.V.
Lomonosova.

(Hydroquinone)

YEVSTIGNEYEVA, R.P.; MARKARYAN, E.A.; PREOBRAZHENSKIY, N.A.

Synthesis of methyl ester of indolo (1,2:2',3')3,4,5,6,7,8,-
hexahydro-7-quinolizylacetic acid. Zhur.ob.khim. 31 no.7:
2187-2190 J1 '61. (MIRA 14:7)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni
M.V. Lomonosova,
(Acetic acid)

FILIPPOVICH, Ye.I.; YEVSTIGNEYEVA, R.P.; PREOBRAZHENSKIY, N.A.

Dipyrrolylmethene series. Part 3: Synthesis of meso-substituted
dipyrrolylmethenes. Zhur.ob.khim. 31 no.9:2968-2972 5 '61.
(MIRA 14:9)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni M.V.
Lomonosova.

(Methene)

YEVSTIGNEYEVA, R.P.; ANKHIPOVA, L.I.; PREOBRAZHENSKIY, N.A.

Dipyrrolylmethene series. Part 4: Synthesis of asymmetric
dipyrrolylmethenes. Zhur.ob.khim. 31 no.9:2972-2975 S '61.
(MIRA 14:9)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni M.V.
Lomonosova.

(Methene)